

2. New Hampshire's Current Picture

2.1 Overview

The cost of energy is an important factor in New Hampshire's economy, in part because, like many other states in our region, we pay more for energy than many of our fellow Americans. In 1999, New Hampshire ranked sixth highest nationally for the cost of one million Btus, and its rank for dollars spent on energy per capita was 19th. These rankings are attributable mainly to the high cost of transportation and heating fuels in the Northeast.

However, recent reductions in electric rates in New Hampshire will have a positive effect on those rankings. Other factors positively influencing the cost per Btu and cost per capita are energy efficiency programs and new technologies that are being instituted in homes, businesses, schools and municipal and state buildings throughout the Granite State.

The table below (2.1) shows that New Hampshire's population increased by 11.4% between 1990 and 2000, as compared with the national growth of 13.1%.¹ However, as table 2.2 shows, our consumption of energy increased by 19.3% for the period 1990 - 1999. Based on 1999 EIA data, New Hampshire is 41st in population in the United States, and 45th in the amount of energy consumed, indicating that despite the increase in per capita energy use, New Hampshire residents consume slightly less per person than the rest of the nation.

Table 2.1 New Hampshire Demographics

US population.....	281.4 million
NH population 2000 census.....	1,235,000
1990 census.....	1,109,252
NH population growth 1990 - 2000.....	11.4%
U.S. population growth 1990-2000.....	13.1%
NH population rank nationally.....	41 st
NH households.....	547,024 housing units
Source: US Census Bureau	

¹This information was compiled for NH Energy Facts, an ECS publication that contains more details on NH's energy use. NH Energy Facts can be found at www.nhecs.org.

2.2 State Energy Generation and Use

Although New Hampshire generates more electricity (16.2 million Megawatt hours) annually than it uses (11.5 million MWh), making it a net exporter of electricity (4,689,000 MWhs, or 28.9% of generation), we import the vast majority of the fuels used to generate the energy we use. As Table 2.4 below shows, \$1.6 billion in energy costs for imported fuels represents money moving out of state for fuels including uranium, oil, natural gas, coal or other non-wood, usually fossil-based, sources.

New Hampshire generates renewable energy from native sources, largely by using wood and wood waste (31.0 trillion Btus from 1.3 million tons of wood chips and saw-mill residue costing \$24.3 million). New Hampshire also produces hydroelectric power (2.36 MWh, for which the “fuel” is free). The tables below include information on New Hampshire’s total use of energy in 1990 and 1999, our growth rates during that period, and our rank overall in the U.S. The second table details our per capita energy use, showing that our use per person in New Hampshire is quite low relative to other states.

Table 2.2 New Hampshire Energy Consumption and Costs

NH Energy Consumption & Costs	
Energy consumed, Btus, 1999	335.4 trillion (335.4 TBtu)
Energy consumed, Btus, 1990	270.8 trillion (270.8 TBtu)
Growth in consumption	19.3% (64.6 TBtus)
National rank for energy consumed overall	45th
Dollars spent for energy	
Nominal dollars per million Btus	\$11.05
Total nominal dollars for energy	\$2,631,100,000
National rank for dollars spent	40 th
Gross State Product (GSP)	\$44,229,000,000
GSP per capita	\$36,823
Efficiency (Btu/\$GSP)	7,573 Btus
Efficiency (GSP Dollars/Tbtu)	\$132,000,000
US average efficiency, GSP Dollars/TBtu:	\$98,000,000
Source: US DOE EIA (1999 data)	

Table 2.3 New Hampshire Energy Consumption and Costs

NH Per Capita Energy Data	
Total Energy consumed	335.4 TBtu
Population of State	1,235,000
Energy consumed <i>per capita</i> (Btu/person)	279,236,122
National rank	41 st
Energy cost, nominal dollars total	\$2,631,100,000
Energy cost, <i>per capita</i>	\$2,190
National Rank	19 th
Source: US DOE EIA (1999 data)	

Petroleum-derived energy - whether for transportation or home heating - dominates New Hampshire's energy picture, constituting more than 54% of the energy we use in the state, and more than 85% of our energy costs.

Our consumption of gasoline is highest among all of the fuels used in the state, representing nearly half of the state's energy consumption costs. It is followed closely by the petroleum distillate, which is used as both #2 heating oil and diesel fuel for transportation. Together, these fuels make up 70% of the cost and 40% of the Btus consumed in the state.

Coal is our fourth largest energy source, primarily because of its use in electric generation, followed by wood. On the cost side, however, natural gas is third, while propane is fourth in overcall costs, although only 10th in its Btu contribution. The table below provides more information on our total consumption.

Table 2.4 New Hampshire Energy Consumption, 1999

Fuel Type	Quantity (Various Units)	Heat Equivalent (TBtu)	%	Total Cost \$Million	%
Uranium (Nuclear Electric Power)	8,676,000 MWh	92.2	27.5	45.6	2.8
Motor Gasoline	15,659,000 barrels (bbl)	81.6	24.3	791.8	48.8
Distillate ¹	9,000,000 bbl	52.4	15.6	320.1	19.7
diesel (on road)	2,734,000 bbl	15.9	4.7 10.9		
#2 heating oil	6,266,000 bbl	36.5			
Coal	1,344,000 tons	35.3	10.5	53.6	3.3
Wood & Wood waste	Various units ²	31.0	9.2	24.3	1.4
Hydroelectric power	2,368,000 MWh	24.5	7.3	0	0
Residual Fuel (i.e. #6 oil)	3,491,000 bbl	21.9	6.5	47.0	2.9
Natural Gas	20,000,000,000 cu. ft.	20.5	6.1	128.9	7.9
Other Petroleum ³	2,591,000 bbl	13.9	4.1	52.3	3.2
LPG (propane)	2,407,000 bbl	8.7	2.6	103.3	6.4
Jet fuel	820,000 bbl	4.6	1.4	19.8	1.2
Kerosene	437,000 bbl	2.5	0.7	16.3	1.0
Asphalt & Road Oil	288,000 bbl	1.9	0.6	8.2	<0.5
Other nonpetroleum ⁴	N/A	1.9	0.6	0	-
Lubricants	88,000 bbl	0.5	0.1	9	0.6
Aviation Gasoline	28,000 bbl	0.1	0.03	1.2	0.1
Net electric losses and exported electricity ⁵	-18,778,000 MWh	-64.1	-19.1	Not known	
TOTAL	N/A	335.4⁶	100	\$1,621.4⁷	100

¹ EIA does not distinguish between the two types of distillate fuels; total cost is combined.

² EIA does not specify units of wood or wood waste. Tons of wood burned at NH wood-fired power plants in 1999: 1,316,011; 97% was from whole-tree chips and sawmill residue (Source: NH DRED, Phase I Low Grade Wood Study).

³ There are 16 petroleum products in the industrial sector. Cost figure also includes kerosene, which is not broken out by EIA.

⁴ Includes geothermal, wind, photovoltaic and solar thermal energy.

⁵ Losses occur primarily in transmission and average approximately 10% nationally.

⁶ Columns do not add up to total, due to independent rounding in EIA data.

⁷ EIA methodology, especially in accounting for electric utility fuel costs and electricity purchased by end users, precludes summing these figures to reach the total cost of \$2,631.1 million. This table is useful for comparison purposes of different energy sources. For example, the cost breakdown does not include the cost of electricity to end users, which is \$1.147 million. Also, dollars have not been adjusted to account for inflation.

Table 2.5. New Hampshire Total Energy Consumption by Type

Total Energy Consumption by Type, 1999	
Type	Qty. TBtu
Petroleum	188.3
Nuclear elec.	92.2
Coal	35.3
Wood and wood waste	31.0
Hydro elec.	24.5
Natural gas	20.5
Exports & loss	-64.1
Source: DOE EIA	

2.2.1 Electric and Gas Utilities serving New Hampshire

New Hampshire customers receive electricity from five major regulated investor owned utilities, one electric cooperative, and five municipally-owned electric companies. Public Service of New Hampshire (PSNH), the state's largest electric utility, serves over 430,000 homes and businesses in 198 communities in the state. Formed in 1926, PSNH has grown to comprise three fossil fuel-fired generating plants and nine hydroelectric facilities, capable of generating more than 1,110 megawatts of electricity. PSNH is a wholly-owned subsidiary of Northeast Utilities, a utility holding company based in Connecticut.

The New Hampshire Electric Cooperative (NHEC), founded in 1939 by a group of farmers in Concord, is a nonprofit electric utility serving approximately 70,000 members in 115 towns across the state. Headquartered in Plymouth, the Cooperative serves members in 10 operating districts: Colebrook, Lisbon, Sunapee, Andover, Plymouth, Meredith, Conway, Alton, Ossipee and Raymond. An elected 11-member Board of Directors runs NHEC. The Board appoints a General Manager who oversees the Cooperative's day-to-day operations.

Unitil, a public utility holding company, has two subsidiaries providing electric service in New Hampshire: Concord Electric Company, Exeter & Hampton Electric Company. Concord Electric serves approximately 28,000 customers in the capital city and twelve communities in the Concord area: Bow, Boscawen, Canterbury, Chichester, Epsom, Salisbury and Webster, and limited areas in the towns of Allenstown, Dunbarton, Hopkinton, Loudon and Pembroke. Exeter & Hampton Electric serves approximately 40,000 customers in seventeen communities in the Exeter area: Atkinson, Danville, East Kingston, Hampton, Hampton Falls, Kensington, Kingston, Newton, Plaistow, Seabrook, South Hampton and Stratham, and portions of the towns of Derry, Brentwood, Greenland, Hampstead and North Hampton. Unitil's two New Hampshire companies are in the process of restructuring, and will do business under the Unitil name beginning in 2003 if the PUC approves its restructuring plan.

Granite State Electric Company, a subsidiary of National Grid USA, provides electricity to approximately 38,000 customers in 21 communities. The company's service area includes the Salem area in

southern New Hampshire, as well as several communities located along the Connecticut River, primarily in the Lebanon and Walpole areas.

Connecticut Valley Electric Company (CVEC), a subsidiary of Central Vermont Public Service Company, serves approximately 10,000 customers in thirteen communities along the Connecticut River Valley, including the city of Claremont and portions of Bath, Charlestown, Cornish, Hanover, Haverhill, Lyme, Newport, Plainfield, Piermont, Pike, Plainfield, Orford and Unity.

Natural gas services are currently available to 53 communities in New Hampshire from two gas utilities, Northern Utilities and KeySpan Energy Delivery. Northern serves approximately 24,000 customers in the Seacoast area.² KeySpan serves approximately 75,000 customers in the south central part of the state.³

2.2.2 Restructuring and Electric Choice in New Hampshire

While work to bring competition to the state's electric industry began in earnest in 1995, its roots go back at least 20 years. Even so, after more than eight decades of monopoly regulation in the electric industry, competition is a fairly recent development.

The Electric Industry Begins

New Hampshire's electric industry began just after the turn of the century. The first electric companies in the state generated power and delivered it to local homes and businesses. These companies faced difficulties transmitting power over long distances due to inefficient wires. Often more than one provider of electric service operated in the same area, and those operations were virtually unregulated.

The Public Utilities Commission was established in 1911 in response to high rates and the recognition that duplication of inefficient wires and poles was wasteful and unsightly. The PUC granted franchised monopolies so that one company served an area, and was charged with determining reasonable rates for electric service. To check the power of these monopolies, the utility's operations were highly regulated.

Technological progress and innovation helped create larger and more efficient generating stations and the regulatory system worked well for many years. However, in the 1970s major changes in the industry began to occur. First, the cost for building plants to meet the growing demand, particularly nuclear power plants such as Seabrook Station, escalated. This was a marked difference from the electric industry's traditional trend of declining costs of generation for large plants. As a result, utilities and consumers were faced with paying for the higher costs of these nuclear generation plants that were built during this time.

²Northern Utilities serves the towns of Atkinson, Dover, Durham, East Kingston, Exeter, Greenland, Hampton, Hampton Falls, Kensington, Madbury, Newington, North Hampton, Pelham, Plaistow, Portsmouth, Rochester, Rollinsford, Salem, Seabrook, Somersworth, and Stratham.

³KeySpan serves the towns of Allenstown, Amherst, Auburn, Bedford, Belmont, Berlin, Boscawen, Bow, Canterbury, Concord, Derry, Franklin, Gilford, Goffstown, Hollis, Hooksett, Hudson, Laconia, Lakeport, Litchfield, Londonderry, Loudon, Manchester, Merrimack, Milford, Nashua, Pembroke, Penacook, Sanbornton, Suncook, Tilton, and Winnisquam.

Rising Electric Rates

The oil crisis of the 1970's also forced us to reconsider our energy policies. One of the outcomes, the Public Utilities Regulatory Policy Act (PURPA), encouraged development of alternative generation and required utilities to purchase electricity from small power producers (SPPs). When PURPA was enacted, the State mandated the purchases of power from SPPs at rates that appeared reasonable given the rising energy costs in the 1970s under a law known as LEEPA (Limited Electrical Energy Producers Act, RSA 362-A, 1978). Long-term agreements to purchase power at set rates were entered into at that time. Today, PSNH continues to be obligated to purchase some power from SPPs even though the rates are significantly higher than current market prices. In an effort to reduce these costs, PSNH has "bought out" contracts of some wood-fired and hydroelectric facilities, so that the company no longer has an obligation to purchase the power from those facilities.

These changes in energy policy resulted in the recognition that independent generation plants could reliably produce electricity. The success of independent power laid the foundation for competition in the generation of electricity. In fact, LEEPA allowed retail competition on a small scale, as SPPs could sell directly to customers. However, this provision was never used, and SPP power was purchased by utilities under long-term contracts.

In January of 1988, a significant upheaval in the state's electric industry occurred when PSNH filed for bankruptcy protection. In 1989, the State reached an agreement with Northeast Utilities (NU) to bring PSNH out of bankruptcy and acquire the utility. The plan included seven annual rate increases of 5.5%. The legislature approved the plan, with some rate increases, and in 1990 the PUC approved the plan.

While that plan allowed PSNH to reorganize and emerge from bankruptcy, the effect of the annual rate increases began to impact New Hampshire residents and businesses. Soon, New Hampshire's electric rates surpassed those of the region and were among the highest in the nation.

A Competitive Electric Market

With the changes in the electric industry in the 1970s and 1980s, as well as the deregulation of other industries, the idea of a competitive electric market took hold throughout the U.S. during the 1990's.

In 1995, the PUC sponsored a Roundtable on Competition in New Hampshire's Electric Energy Industry. Also in that year, legislative committee work began on House Bill 1392, which was signed into law by the Governor in May of 1996 as RSA 374-F, the Electric Industry Restructuring Act.

HB 1392 directed the PUC to divide the traditional utility functions and "aggressively pursue restructuring and increased consumer choice." As a result, instead of utilities generating, transmitting and distributing electricity, the law separated of the generation of energy from the transmission and distribution functions. A consumer's utility will remain in place to deliver electricity, but customers can choose their energy supplier. The law maintains the monopoly for delivery of electricity, avoiding the duplication of wires and

poles. However, for a period of time while a competitive market is established in New Hampshire, our utilities will continue to provide power through regulated “transition service.”

Restructuring Overview

After passage of the Electric Industry Restructuring Act in May of 1996, the PUC developed a plan to implement restructuring. The PUC issued its “Final Plan” on February 28, 1997 which targeted full retail competition to begin on January 1998, or in any event no later than July 1, 1998.⁴

However, federal litigation filed within days of the Final Plan by PSNH and its parent Northeast Utilities challenged the Plan on federal preemption and constitutional grounds. At the heart of the matter was a dispute over who should pay for “stranded costs.” Stranded costs are costs, liabilities, and investments that a utility would reasonably expect to recover in a traditional, regulated marketplace but, absent some legal mechanism to assure recovery, could not recover in a restructured marketplace. One example of stranded costs are contracts to purchase electricity at above-market prices from Small Power Producers (SPPs).

The existence of PSNH’s 1989 Rate Agreement, as well as the claimed impacts on PSNH of the regional average rate approach adopted by the PUC, made PSNH’s case somewhat unique, although the state’s other investor-owned utilities - CVEC, Unitil and GSEC - all eventually joined the suit. PSNH obtained a Temporary Restraining Order, barring the PUC from implementing its restructuring orders.

In May of 1997, the case was referred for formal mediation, but this ultimately proved unsuccessful. In June 1998 an expanded injunction was issued, preventing the PUC from implementing restructuring for any of the state’s utilities, except in voluntary or consensual filings. This injunction was later upheld by the First Circuit Court of Appeals. Consequently, statewide implementation of restructuring could not go forward, and instead there has been a utility-by-utility phase-in approach as settlements have been reached.

In July 1998, a settlement between Granite State Electric Company (GSEC), the State, and others was finalized. The agreement brought rate reductions, including a 10% reduction on July 1, 1998 and a further 7% reduction on September 1, 1998; unbundled rates; ratepayer funded efficiency and low income bill assistance programs; and opened the door to customer choice. In 2002, GSEC filed to take advantage of the Legislature’s extension of the maximum length of transition service in HB489 (Ch. 29) in the 2001 Session. As a result, GSEC customers can remain on transition service through April 30, 2006.⁵

The New Hampshire Electric Cooperative (NHEC) opened its service territory to competition on January 1, 2000, after the State helped NHEC reach a settlement with its wholesale supplier, PSNH, to remove barriers to competition. As a result, NHEC customers saw a significant rate reduction of approx-

⁴ Information and documents related to restructuring can be found at www.puc.state.nh.us/d96150pg.html.

⁵ See www.puc.state.nh.us/orders/2002ORDS/23966e.pdf for the PUC’s Order approving GSEC’s proposal to extend the length of transition service.

imately 22% on January 1, 2000, as well as ratepayer funded efficiency and low income bill assistance programs. NHEC customers still receive transition service from their electric utility because of a Legislative change. In HB489 of 2001 (Ch. 29), the Legislature expanded NHEC's exemption from regulation by the PUC, amending RSA 362:2, II, and making a distinction between investor-owned utilities and electric cooperatives in some instances related to restructuring. The amendment eliminated the PUC's jurisdiction over NHEC's transition service and other energy services that NHEC may provide to its customers. As a result, the PUC has jurisdiction only over NHEC's "default service," which is the last resort source of electricity to ensure that a utility's obligation to serve remains after restructuring.

On June 14, 1999 PSNH, along with the State negotiating team, including the Governor's Office of Energy and Community Services (ECS), NH Public Utilities Commission (PUC) settling staff, and the Attorney General's Office, announced a comprehensive Settlement Agreement on restructuring. The Agreement was filed on August 2, 1999, and the PUC approved the Agreement with conditions on April 19, 2000. On May 31, 2000 the Legislature passed legislation necessary to implement the settlement, and on June 12, 2000 Governor Shaheen signed Senate Bill 472 (RSA 369-B). The PUC issued final orders on September 8, 2000, incorporating legislative changes, approving a finance order, and denying motions for rehearing.

The PSNH restructuring settlement provided an automatic 5% rate reduction on October 1, 2000 and another reduction totaling a combined average of 15% - 17% for residential households when PSNH began retail competition on May 1, 2001. Additional rate reductions will occur in the future as certain "stranded" costs are paid off, including when the sale of Seabrook is completed in late 2002. PSNH customers will have the ability to choose their electricity supplier based on price, environmental factors, and other issues important to consumers.

The Settlement also required PSNH to sell its power plants and power supply contracts, with all proceeds going to reduce stranded costs, and provided a sizeable utility write-off of stranded costs amounting to over a third of the equity in the company.

In order to implement the PSNH settlement, the Legislature approved the issuance of up to \$670 million in rate reduction bonds, a refinancing mechanism known as securitization that helped lower customers' electric rates, with additional securitization available to finance renegotiated small power producer contracts to obtain added savings.

As with GSEC and NHEC, PSNH's settlement also included programs designed to make consumers' bills more affordable, including energy efficiency and low income bill assistance programs, which are funded through a system benefits charge on customers bills. These programs are consistent with the Electric Industry Restructuring Act, in which the legislature specifically found that

Restructuring of the electric utility industry should be done in a manner that benefits all consumers equitably and does not benefit one customer class to the detriment of another A nonbypassable and competitively neutral system benefits charge applied to the use of the distribution system may be used to fund public benefits related to the provision of electricity Such benefits, as approved by regulators, may include, but not necessarily be limited to, programs for low-income customers, energy efficiency programs . . . support for research and development, and investments in commercialization strategies for new and beneficial technologies.

RSA 374-F:3, VI, Electric Industry Restructuring Act

The energy efficiency programs funded by the system benefits charge are discussed in more detail in Chapter 9. The low income bill assistance program, known as the Electric Assistance Program (“EAP”), was approved by the PUC in 2002 as a tiered discount program.⁶ The EAP is operated statewide by the state’s electric distribution companies, working with the Community Action Agencies around the state.

EAP provides income-eligible customers with discounts on their electric bills, intended to bring the customer’s annual electric bill to approximately 4% of annual income for general use customers, and 6% for customers with electric heat. Eligibility is based upon 150% of the Federal Poverty Level, and the discount depends on a customer’s income level, and the household’s electric usage.

Since “Competition Day” for PSNH, the Legislature has amended the Electric Industry Restructuring Act to address new issues. In 2001 the Legislature passed HB489 (Ch. 29), which made several changes to transition service. The bill increased the length of transition service, allowing all restructured utilities to extend transition service to match up with PSNH’s transition service period to facilitate all customers in the state entering competition simultaneously. PSNH’s transition service periods were also extended so that residential customers can receive the service until as late as February of 2006, and larger customers until February of 2005. The pricing levels for transition service were also changed, so that the largest customers will receive PSNH’s actual cost of providing the service beginning in February 2003, and residential customers move to actual pricing in February 2004.

The bill also required that PSNH keep its hydroelectric and fossil fuel assets, while moving forward with the sale of Seabrook, until at least February 2004. PSNH must provide transition and default service from those assets, and supplement any additional power needs from the market. The text of the bill can be found at www.gencourt.state.nh.us/legislation/2001/HB0489.html.

More recently, Unital put forth a restructuring plan and a proposal to merge its two companies in New Hampshire. The PUC has approved Phase I of the settlement, and the second phase is proceeding with final approval expected in 2003. At this time, Connecticut Valley Electric Company is the last investor owned utility that has not yet opened its service territory to competition.

⁶The Order approving the Tiered Discount Program can be found at www.puc.state.nh.us/Orders/2002ORDS/23980e.pdf.

Much has been written on the status of restructuring, and it is fair to say that New Hampshire must continue to work both within the state and with other states in the region to reach full retail competition. One remaining issue is default service, which is the safety net service designed to provide energy for short periods of time, such as when a customer is between competitive suppliers. There is usually no limit on the length of time a customer may remain on this service, and it will always be available from the utility to ensure that consumers receive uninterrupted power when they switch from one energy supplier to another. If for any reason consumers are temporarily without an energy supplier or, in some cases, if they choose not to choose an energy supplier, they will automatically receive default power service.

Another of the changes in HB489 of 2001 dealt with default service. Largely in response to the California electricity crisis of 2000 - 2001, the Legislature removed the requirement that New Hampshire default service prices must be based on the short-term market. Instead, new language gives the Commission oversight over pricing of default service in order to protect customers. More legislative changes may be needed as competition progresses in the state and in the region, and as new issues arise.